

STUDIES IN THE LIABEAE (ASTERACEAE). V.

NEW ANDEAN SPECIES OF LIABUM

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An attempt to treat the genus Liabum (*sensu* Robinson and Brettell, 1974) for the Flora of Ecuador has resulted in refined concepts of many older species and in the recognition of six previously undescribed species. In view of the erratic identifications and annotations that have been encountered it seems best to provide all new species descriptions and the comments on other Colombian and Peruvian species at this time to make them available to other workers. Comments on other Ecuadorian species will be given elsewhere.

Liabum amplexicaule Poepp. & Endl. of Peru is notable for the distinctly grooved stems, the small disks on the nodes, the narrow leaves with lateral veins near the margins, and the glabrous disk corollas. Liabum ulei Hieron. has previously been recognized as a synonym. Actually L. acuminatum Rusby of Bolivia and Peru is distinguished from L. amplexicaule only by the complete lack of disks on the nodes. Liabum falcatum Rusby of Santa Marta in Colombia also is very similar in habit but the distinction suggested by the geography is reenforced by the presence of hairs on the disk corollas. Many broader-leaved specimens with lateral veins remote from the margins have been seen annotated as L. amplexicaule. Some of those from Peru seem to be L. eriocaulon Poepp. & Endl. which I would hold distinct for the present even though it shares most other characters with L. amplexicaule. Other broad-leaved specimens annotated as L. amplexicaule from Ecuador and Peru prove to be various of the new species described below.

Liabum asclepiadeum Sch. Bip. of Venezuela and Colombia is notable for the lack of disks on the nodes, the winged petioles, and the upper leaf surface varying from smooth to distinctly papillose. Liabum caliense Hieron. and L. subumbellatum Rusby have previously been recognized as synonyms. The species has not been seen south of Colombia and material so annotated from Peru is mostly the new species L. ferreyrii.

Liabum solidagineum (H.B.K.) Less. of Peru and Bolivia is notable for its nearly terete stems with rather persistent dense tomentum, the leaves shortly trinervate with lateral veins rarely reaching beyond midleaf, and the corolla lobes being nearly smooth. Liabum fulvotomentosum O.Kuntze has been recognized as a synonym and L. acutifolium Cuatr. should be added to the synonymy. Specimens named L. solidagineum from Colombia and Ecuador differ most significantly by the densely spiculiferous tips of the corolla lobes and they seem to represent forms of L. igniarium (H.B.K.) Less.

Liabum nigropilosum Hieron. is an Ecuadorian species of limited distribution. The winged petioles are very distinctive. Liabum stipulatum Rusby of Colombia has been placed in synonymy but the petioles of the latter are unwinged and the species seems thoroughly distinct.

The following new species can be distinguished by numerous features including stem ribbing and pubescence, nodal disks, leaf venation and margin, density of the inflorescence, involucral bracts and geography. In the process of preparing descriptions it was discovered that each can also be identified by details of the disk corollas alone.

Liabum barclayae H.Robinson, sp. nov.

Plantae suffrutescentes terrestres 2-3 m altae laxe ramosae. Caules teretes vel vix sexangulares dense canescentiter tomentelli, nodis disciferis, discis minime 3-4 mm diam. Folia opposita, petiolis ca. 7-10 mm longis non alatis; laminae ovatae 6-10 cm longae et 2-5 cm latae base subrotundatae et anguste acuminatae margine minute approximate serratae apice acutae vel breviter acuminatae supra non pilosae obscurō-virides laeves subtus canescentiter dense tomentellae in nervis solum albo-tomentellis fere ad basem trinervatae, nervis lateralibus valde ascendentibus inferne e marginis remotis superne tenuibus 2/3 laminarum attingentibus. Inflorescentiae terminales cymosae, pedicellis 1-15 mm longis albo-arachnoideo-tomentellis et obscure rubro-pilosis. Capitula 8-9 mm alta ca. 7 mm lata. Squamae involucri 50-55 ca. 5 seriatæ 2-6 mm longae lanceolatae vel linearilanceolatae margine et plerumque apice purpurascentes apice longe attenuatae extus sparse puberulae et arachnoideo-pubescentes interiores subtiliter carinatae; cristae receptaculorum lacinis longis obsitae. Flores radii ca. 22-27; corollæ flavae, tubis 3 mm

longae superne piliferae, limbis 5-6 mm longis anguste ellipticis. Flores disci ca. 25; corollae flavae, tubis ca. 3 mm longis superne sensim latoribus puberulis, fauca indistinctis ca. 1.5 mm longis, lobis 2 mm longis ca. 0.3 mm latis apice sublaevibus; thecae antherarum ca. 2.8 mm longae; appendices oblongae ca. 0.35 mm longae et 0.17 mm latae. Achaenia ca. 1 mm longa dense setifera; setae pappi interiores ca. 25 ca. 4.5-5.5 mm longae exteriores parum latiores ca. 2 mm longae. Grana pollinis ca. 25 μ diam.

TYPE: ECUADOR: Chimborazo: Short distance south of Chunchí on road to Cuenca. Roadside banks with shrubs, land mostly cultivated. Alt. cerca 2700 m. Beautiful herb to 2-3 m tall. Stems and under sides of leaves whitish with fine woolly hairs. Invol. bracts green, woolly with sharp brown tips. Ligul. fls. yellow, narrow; disc fls. yellow; stigmas yellow, very long. July 27, 1959. Harriet G. Barclay & Pedro Juajibioy 8316 (holotype US).

The new species has the more terete stems and short lateral nerves of the leaves that suggests relationship to Liabum igniarium and L. solidagineum. Liabum barclayae differs from these and most other species of the genus by the very elongate involucral bracts. The species occurs within the range of L. igniarium from which it differs further by the smooth lobe tips of the disk corollas.

Liabum ferreyrii H. Robinson, sp. nov.

Plantae suffrutescentes subscandentes terrestres 1-2 m altae pauce ramosae. Caules distincte sexangulares sparse arachnoideo-pubescentes, nodis non disciferis solum anguste alatis. Folia opposita, petiolis indistinctis alatis in nodis anguste connatis; laminae late ellipticae raro obovatae 8-14 cm longae et 2.5-7.5 cm latae base cuneatae et acuminatae margine distincte argute saepe remote serratae apice anguste breviter acuminatae supra non pilosae obscurō-virides sublaeves in nervis et saepe nervulis prominulæ subtus plerumque lepidote albo-tomentosæ in nervis sordidae non pilosae supra basem trinervatae, nervis secundariis intramarginalibus distinctis tenuibus, nervis lateralis majoribus valde ascendentibus 7/8 longitudinem laminarum attingentibus. Inflorescentiae terminales laxe cymosae, pedicellis 5-35 mm longae albo-arachnoideo-tomentellæ et obscure rubro-pilosæ. Capitula ca. 8 mm alta et 10 mm lata. Squamae involucri ca. 60 ca. 5-seriatae valde inaequales 1.5-4.0 mm longae ovatae vel lanceolatae apicæ acutæ et purpurascentes exteriores persistentiter arachnoideo-

tomentellae interiores extus minute puberulae; cristae receptaculorum breviter lobatae. Flores radii ca. 20; corollae flavae, tubis 3 mm longis superne paucem piliferis, limbis ca. 7 mm longis et 1 mm latis extus usque ad medio puberulae. Flores disci ca. 20; corollae flavae tubis 2.0-3.5 mm longis subglabris, faucis 1.2-1.5 mm longis extus sparse puberulis, lobis 1.5 mm longis et 0.4 mm latis apice sublaevibus; thecae anteriarum 2 mm longae; appendices oblongo-triangulares 0.3-0.4 mm longae et ca. 0.17 mm latae. Achaenia matura 2.5-3.0 mm longa setifera; setae pappi interiores 40-50 plerumque 6-7 mm longae inferne tenues apice breviter et distincte paucem incrassatae exteriores ca. 1.5 mm longae linear-lanceolatae. Grana pollinis 25-30 μ diam.

TYPE: PERU: Huánuco: Prov. Huanuco, Carpish, entre Huánuco i Tingo María. Alt. 2700-2800 m. bosque denso siempre verde. Arbusto 1.2-1.5 m. 1 Oct. 1950. Ramón Ferreyra 8074 (holotype US). Paratypes: PERU: Huánuco: Carpish, cumbre entre Huánuco y Tingo María. Alt. 2700-2900 m. Selva subtropical. Arbusto 0.8-1.2 m, flores amarillas, Ferreyra 8152 (US); carretera Huánuco-Tingo María. Alt. 2800-2900 m. Ferreyra 2333 (US); Carpish Pass, 84 km from Tingo María on highway to Lima; alt. about 2750 m. 19 Nov. 1949. H.A. Allard 20982, 21099 (US); Carpish, above Acomayo, rd to Tingo María. Alt. 2800 m. Laxly vining shrub 2 m. on open slopes. Leaves dull green, tannish white beneath. Fls. golden yellow. 17 July 1964. Hutchison, Wright, & Straw 5948 (US).

Liabum ferreyrī is related to L. asclepiadeum of Colombia and Venezuela by the winged petioles and lack of discrete expanded disks on the nodes. Among the numerous differences are the generally larger sizes of heads and achenes in the new species, the more remote and more strongly mucronate teeth, the complete lack of papillae on the upper leaf surface, the nearly smooth tips of the disk corolla lobes, and the lack of laciniate chaff on the ridges of the receptacle. The leaves of the new species have a distinctive appearance, tending to be more obovate with the lateral veins usually running parallel to the margins. Particularly marked are the weaker but distinct veins from nearer the base that also run upward along the basal 1/3 - 1/2 of the margin.

Liabum kingii H. Robinson, sp. nov.

Planta suffrutescens terrestres 1-2 m altae laxe ramosae. Caules teretes vel vix sexangulares appresse evanescit arachnoideo-tomentelli, nodis

disciferis, discis 5-15 mm diam. Folia opposita, petiolis 5-40 mm longis non alatis; laminae ovatae 4-13 cm longae et 2.2-6.0 cm latae base late cuneatae vel subrotundatae et anguste acuminatae margine approximatae argute serratae apice acutae vel breviter acuminatae supra non pilosae obscurō-virides sublaeves nervis et nervulis vix prominulis subtus dense albo-tomentellae in nervis solum albo-tomentellae fere ad basem trinervatae, nervis lateralibus valde ascendentibus inferne ad marginem saepe subparallelis superne subpercurrentibus. Inflorescentiae terminales laxe cymosae, pedicellis plerumque 5-20 mm longis arachnoideo-tomentellis et distincte rubro-pilosis. Capitula ca. 5 mm alta et lata. Squamae involucri 55-70 ca. 5-seriatae 1-4 mm longae anguste oblongae vel anguste lanceolatae exteriores extus sparse arachnoideo-tomentellae apice anguste obtusae purpurascentes interiores extus sparse minute puberulae apice acutae plerumque virides; cristae receptaculorum laciniis longis obsitae. Flores radii ca. 25; corollae flavae, tubis 2.5 mm longis piliferae, limbis ca. 5 mm longis et 1 mm latis anguste ellipticis base piliferis. Flores disci ca. 25; corollae flavae, tubis ca. 2 mm longis piliferis, faucis distinctis ca. 0.5 mm longis plerumque piliferis, lobis ca. 1.8 mm longis ca. 0.2 mm latis apice dense spiculiferis; thecae antherarum ca. 1.7 mm longae; appendices longe triangulares ca. 1.4 mm longae et 0.17 mm latae. Achaenia ca. 1 mm longa dense setifera; setae pappi interiores ca. 25 plerumque 4 mm longae exteriores ca. 1 mm longae indistinctae. Grana pollinis ca. 25 μ diam.

TYPE: ECUADOR: Tungurahua: along the road to Puyo, ca. 2 kms E of Río Negro. Elev. ca. 4300 ft. Common, up to 1 $\frac{1}{2}$ meters tall, open areas, flowers yellow. 21 Jan. 1974. R.M.King 6563 (holotype US). Paratypes: ECUADOR: Tungurahua: Valley of Pastaza River, between Baños and Cashurco, 8 hours east of Baños. Alt. 1300-1800 m. 25 Sept. 1923. A.S.Hitchcock 21843 (US); Along the road to Puyo, ca. 2 kms E of Rio Negro. Elev. ca. 4300 ft. Shrub 1 m tall, shaded area, flowers yellow. 21 Jan. 1974. R.M.King 6555 (US); Along the road to Tena, ca. 18 kms N of Puyo. Elev. ca. 3800 ft. Abundant plants, open sun, flowers yellow. 22 Jan. 1974. R.M.King 6568 (US); Roadside approx. 30 km. e. Baños, Pastaza ca. 1300 m. 11 June 1974. J.A.Odom 109 (US); In silv. suband. Aug. 1901. Sodiro 88 (US); 1857-9. R.Spruce 5122 (NY); Pastaza R., alt. 1200 m. Herb. 1 m high. Feb. 1935. A.Rimbach 279 (NY).

Liabum kingii is one of the group with disks on

the nodes and the lateral veins of the leaf reaching nearly to the tip. Of the related species L. vargasii n. sp. of Peru differs by the more grooved and more densely tomentose stems, by the more acuminate leaf tips, the slightly larger heads with greener more acute bracts, more flowers per head, and by the disk corollas with longer glabrous throats and smooth lobe tips. Liabum trianae n. sp. of Colombia differs by the more closely serrate leaves having papillose upper surfaces, heads with more flowers, and the disk corollas with longer glabrous throats. Only L. saloyense Domke of northern Ecuador and southern Colombia seems to have disk corollas with short throats as in L. kingii, but it differs by the more grooved stems, the rather rhomboid leaf blades having papillose upper surfaces, and by the blades being trinervate from the extreme base with the veins brownish pilose beneath.

Liabum macbridei H. Robinson, sp. nov.

Plantae suffrutescentes vel frutescentes terrestres 1-3 m altae pauce ramosae. Caules vix sexangulares vel teretes sparse arachnoideo-pubescentes, nodis disciferis, disci 5-8 mm diam. Folia opposita, petiolis plerumque 1-3 cm longis non alatis; laminae ovatae 6-20 cm longae et 3-11 cm latae base late et distincte acuminatae margine subintegrae dense perminute denticulatae apice distincte breviter acuminatae supra non pilosae laeves obscuro-virides subtus albotomentosae in nervis non pilosae 5-20 mm supra basem trinervatae, nervis later-alibus valde ascendentibus inferne saepe e marginis remotis superne tenuibus solum 2/3-3/4 longitudinem laminarum attingentibus. Inflorescentiae terminales laxae cymosae, pedicellis 5-30 mm longis albo-tomentosis, pilis rubro-septatis subnullis. Capitula 6-7 mm alta et 10-11 mm lata. Squamae involucri 70-90 ca. 5-seriatae valde inaequales 1-5 mm longae lanceolatae vel linear-lanceolatae apice acutae in squamis exterioribus interdum purpurascentes extus arachnoideo-tomentellae interiores extus puberulæ; crista receptaculorum lacinis longis obsitae. Flores radii ca. 32-33; corollæ flavae, tubis 3.0-3.5 mm longis superne dense piliferis, limbis 5-6 mm longis et 1 mm latis glabris. Flores disci 35-40; corollæ flavae non piliferae, tubis ca. 3 mm longis glabris, fauca 1.3 mm longis glabris, lobis ca. 1.2 mm longis et 0.2-0.3 mm latis apice dense spiculiferis; thecae antherarum 1.9 mm longae; appendices anguste ovatae ca. 0.30 mm longae et 0.15 mm latae. Achaenia immatura ca. 1 mm longa setifera; setae pappi interiores ca. 25 plerumque 4.0-4.5 mm longae apice interdum vix incrassatae exter-

iores 1.0-1.5 mm longae lineares. Grana pollinis ca. 25 μ diam.

TYPE: PERU: Huánuco: Río Huallaga Cañon, below Río Santo Domingo, about 4000 ft. Open wood. Open, 2-3 ft. high. Deep Yellow. 2 June 1923. F.J.Macbride 4224 (holotype US). Paratype: PERU: Junin: Oreja de Capelo, between Tarma and La Merced, at tunnel entrance thru mt. steep mountain side. Rays yellow, disc dark yellow. Undersurface leaves white. To 1 m tall. 9 Sept. 1972. J.Canne & J.Schunke V. 266 (US).

Liabum macbridei has nearly terete stems with rather persistent tomentum and leaves with short lateral veins indicating relationship to L. igniarium of Colombia and Ecuador and L. solidagineum of Peru and Bolivia. Both of the related species differ in the tendency for coarser teeth on the leaf margin and more purple involucral bracts. Liabum igniarium differs further by the shiny upper leaf surface with prominent veinlets, by the generally larger heads, and by the hairs on the throats of the disk corollas. In L. igniarium there is also a tendency for the nodal disks to become very large, a condition not seen in the limited material of the new species. Liabum solidagineum is further distinguished by the usually lanceolate leaves which are often shiny above, by the broad involucral bracts, and by the smooth lobe tips of the disk corollas.

Liabum trianae H.Robinson, sp. nov.

Plantae suffrutescentes terrestres ca. 1 m altae paucæ ramosæ. Caules sexangulares vel subteretes appresse evanescentiter arachnoideo-pubescentes, nodis disciferis, discis 5-10 mm in diam. Folia opposita, petiolis 5-40 mm longis non vel anguste alatis; laminae ovatae vel anguste ovatae 6-13 cm longae et 2-8 cm latae base cuneatae vel late cuneatae et anguste acuminate margine dense argute serratae apice breviter acuminatae vel breviter acutae supra dense papillosae obscuro-virides subtus albo-tomentosae in nervis non pilosae inferne trinervatae, nervis lateralibus valde ascendentibus inferne interdum e marginis remotis superne percurrentibus. Inflorescentiae terminales laxæ cymosæ, pedicellis 5-35 mm longis albo-arachnoideo-tomentellæ et distincte rubro-pilosæ. Capitula 8-10 mm alta et 10-12 mm lata. Squamae involucri ca. 80 in serieibus 5-6 valde inaequales 1-5 mm longæ lanceolatae vel linear-lanceolatae plerumque purpureas apice argute acutæ extus minute puberulæ inferne arachnoideo-tomentellæ; cristæ receptaculorum laciniis longis obsitæ. Flores radii ca. 38-45;

corollae flavae, tubis 3.5-4.0 mm longis piliferis, limbis 7-10 mm longis et 1 mm latis base piliferis. Flores disci ca. 50; corollae flavae, tubis 2.5-4.0 mm longis piliferis, faucis 1.0-1.3 mm longis base piliferis, lobis 1.5-2.0 mm longis et 0.4 mm latis apice dense spiculiferis; thecae antherarum ca. 2 mm longae; appendices 0.4 mm longae et 0.17 mm latae. Achaenia ca. 1 mm longa setifera; setae pappi ca. 30 plerumque 5.0-6.0 mm longae apice vix incrassatae, serieibus exterioribus nullis vel subnullis. Grana pollinis 25-30 μ diam.

TYPE: COLOMBIA: Tolima: Central Cordillera, ca. 23 kms west southwest of Fresno. El. ca. 2350 m, uncommon, shaded areas; flowers orange-yellow. 16-17 July 1965. R.M.King, A.E.Guevara, & E.Forero G. 6006 (holotype US; isotype NY). Paratypes: COLOMBIA: Linden 103 (US); Caldas: Cordillera Central, Salento, edge of forest above Salento, alt. 2100-2500 m, herb, flowers yellow. 25-31 July 1922. F.W.Pennell 8896 (US); Tolima: Mariquita, 1800 m. Triana II35 (US).

The new species has been collected by a series of collectors starting with Triana. It is in the relationship of L. kingii n. sp. and most of the distinctive characters are given under that species. Liabum trianae is further distinguished from all but L. saloyense by the near lack of a short outer series of setae on the pappus.

Liabum vargasii H.Robinson, sp. nov.

Plantae suffrutescentes 2-3 m altae pauce ramosae. Caules valde sexangulares dense sordido-tomentosi, nodis disciferis, discis 5-14 mm in diam. Folia opposita, petiolis angustis 10-25 mm longis non vel vix alatis; laminae ovatae 7-18 cm longae et 3.5-7.5 cm latae base breviter anguste acuminatae margine argute mucronato-serratae apice anguste longe acuminatae supra laeves non pilosae obscuro-virides subtus albotomentosae in nervis fuscantes fere ad basem trinervatae, nervis lateralibus valde ascendentibus e marginis remotis 4/5 longitudinem laminarum attингentibus. Inflorescentiae terminales laxae, pedicellis plerumque 5-30 mm longis. Capitula 7-8 mm alta et 7-12 mm lata. Squamae involucri 60-80 ca. 5-6-seriatae valde inaequales 1.5-6.0 mm longae exteriores ovato-lanceolatae argute acutae inferne persistentiter arachnoideo-tomentosae interiores lineares anguste acutae extus minute puberulae in medio subcarinatae; cristae receptaculorum lacinis longis obsitae. Flores radii ca. 30-33; corollae flavae, tubis 2.0-3.5 mm longis piliferis, limbis 5-6 mm longis et 1.3 mm latis anguste ellipticis. Flores disci ca. 35-40; corollae

flavae, tubis ca. 2-3 mm longis piliferis, faucis distinctis 1-2 mm longis, lobis ca. 1.5 mm longis et 0.3 mm latis apice subglabris vel paucे spiculiferis; thecae antherarum 2 mm longae; appendices oblongae ca. 0.25 mm longae et ca. 0.1 mm latae. Achaenia ca. 1 mm longa setifera; setae pappi interiores ca. 25 plerumque 4 mm longae apice vix incrassatae exteriores ca. 1 mm longae. Grana pollinis ca. 25 μ diam.

TYPE: PERU: Cuzco: Urubamba, Machupycchu, alt. 2000 m. Arbusto 1 m +. 28 July 1951. Vargas 10182 (US). Paratypes: PERU: Cuzco: Urubamba, Macchupicchu, alt. 2400 m, selva subtropical baja. Arbusto, flores amarillas. 18 Nov. 1947. R.Ferreyra 2691 (US); Macchu-Picchu, monte perennifolio. Arbusto 2-3 m de alto, flores amarillas. Alt. 2000 m. 8 Aug. 1954. R.Ferreyra 9910 (US).

Liabum vargasii is related to L. kingii n. sp. and differences are discussed under that species.

Literature Cited

- Robinson, H. and R. D. Brettell 1974. Studies in the Liabeae (Asteraceae). II. Preliminary survey of the genera. *Phytologia* 28 (1): 43-63.



UNITED STATES NATIONAL HERBARIUM
Liabum barclayae H. Robinson Holotype
Specimens examined for a study of the Composite tribe Verbeninae

1976

PLANTS OF ECUADOR, SOUTH AMERICA
Liabum xylegynodium Sch Bge.

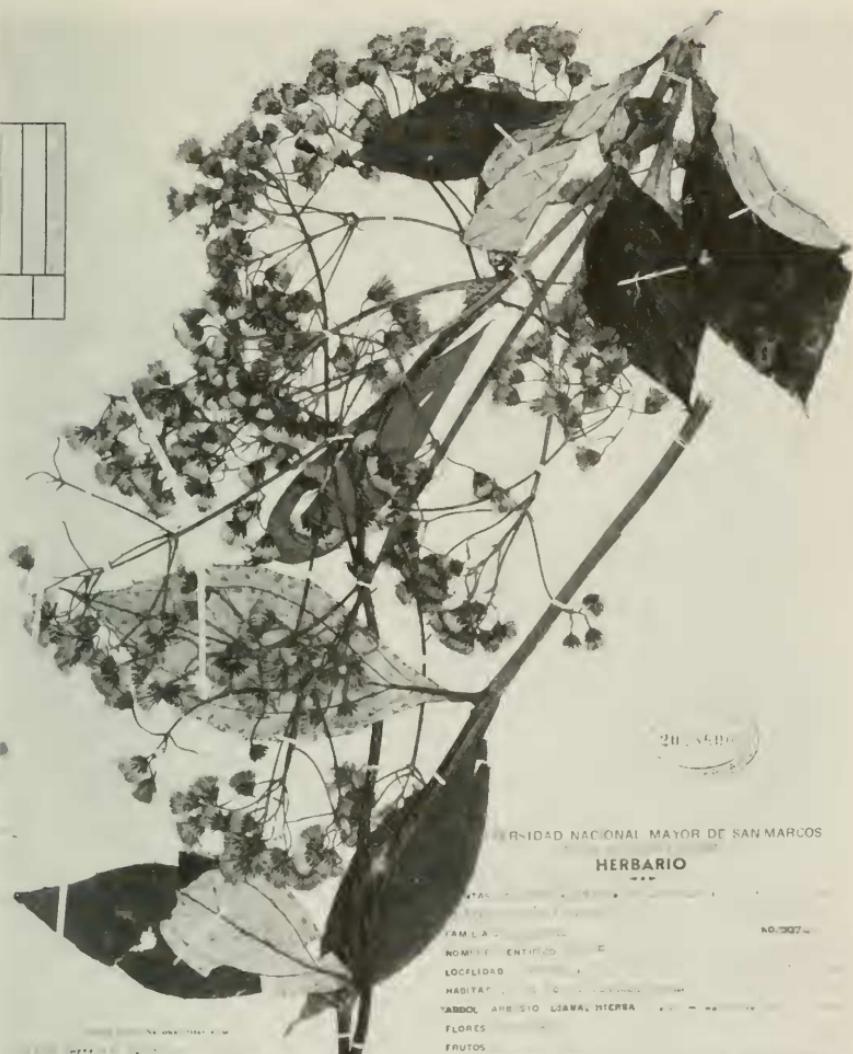
Beautiful herb to 2-3m. tall. Stems and under sides of leaves whitish with fine woolly hairs. Invol. bracts green, woolly, with sharp brow. tips. Ligul. fls. yellow, narrow; disc fls. yellow; stigmas yellow, very long.

Roadside banks with shrubs, land mostly cultivated.
Alt. circa 2700 m. Short distance south of
Pazos Chunchi. Herbarium specimen sent to the Linnean Society of
Chunchi on road to Cuenca. Jan. 1976

No. 8316

Hannet G. Bailey - I Peña, photo
C. M. T. C. and I. National Science Trustee - W.H.
C. M. T. C. and I. National Science Trustee - W.H.
C. M. T. C. and I. National Science Trustee - W.H.

Liabum barclayae H. Robinson, Holotype, United States National Herbarium. Photo by Victor E. Krantz, Staff Photographer, National Museum of Natural History.



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Liabum ferreyrii H. Robinson, Holotype, United States National Herbarium.



PLANTS OF ECUADOR

Robert M. Smith

UNITED STATES

2733058

NATIONAL HERBARIUM

Liabum kingii H. Robinson, Holotype, United States National Herbarium.



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PLANTS OF SOUTH AMERICA

Bull. U. S. Natl. Mus., March 1931, Vol. 50, No. 1.

Liabum see *Liabum*
B. C. Macbride, 1923
B. C. Macbride, 1923

ABOUT 4000 FEET

JUNE 3, 1923

COLL. J. FRANCIS MACBRIDE

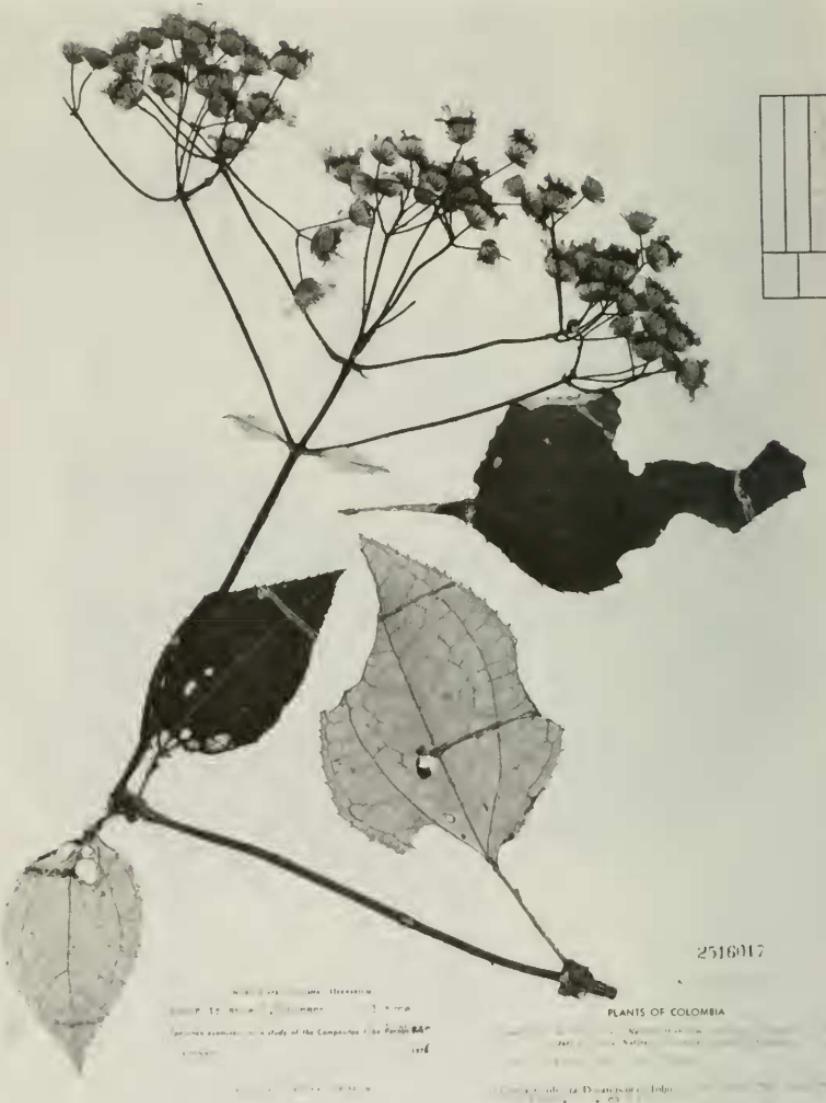
RIO MUALLAGA CAÑON
SILLO MACHAY, CHIMBORAZO
PERU

WILLIAM BENTON NATIONAL HERBARIUM
Liabum macbridei Holotype
Holotype
Specimen examined for a study of the Composite tribe Verbenadoe.

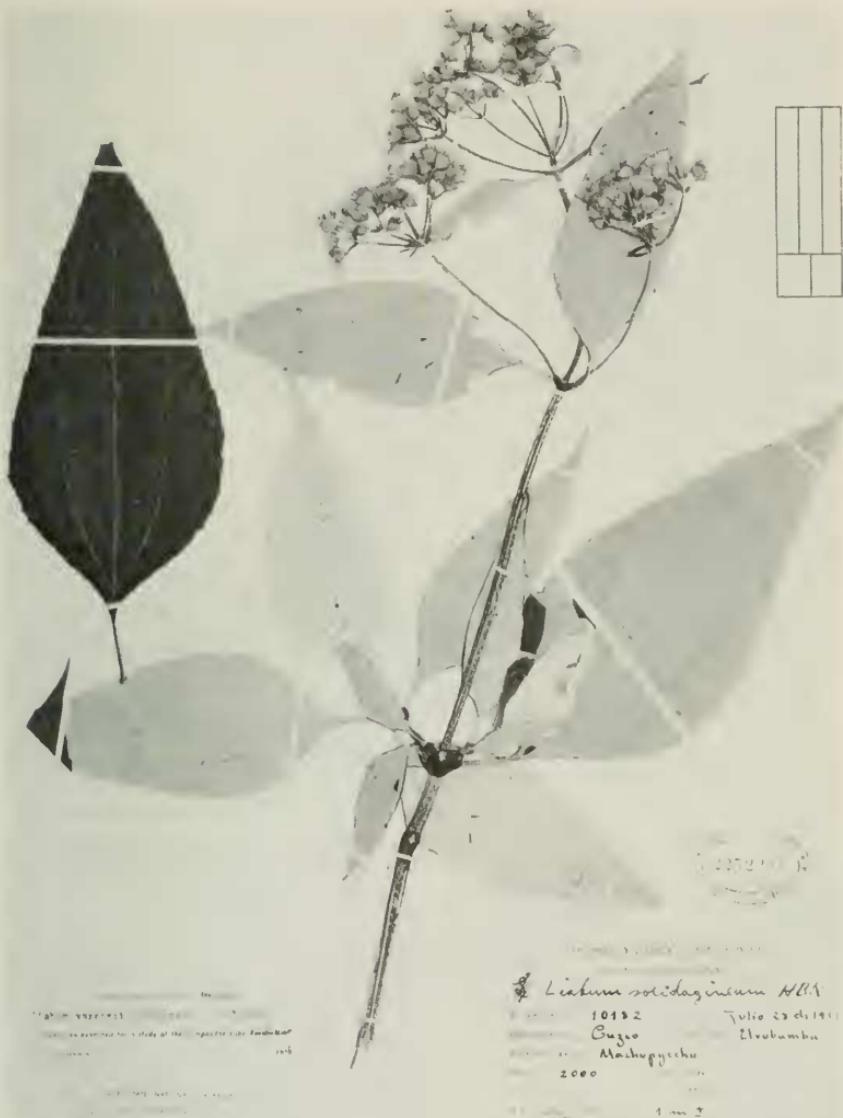
H. ROBINSON

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Liabum macbridei H. Robinson, Holotype, United States National Herbarium.



Liabum trianae H. Robinson, Holotype, United States National Herbarium.



♂ *Liabum solidaginum* H.R.
 10152 Julio 23 de 1911
 Cusco Uribamba
 Machupicchu
 2000

Liabum vargasii H. Robinson, Holotype, United States National Herbarium.



Enlargements of heads of *Liabum*. Top: *Liabum barclayae* and *L. ferreyrii*. Middle: *L. kingii* and *L. macbridei*. Bottom: *L. trianae* and *L. vargasii*.